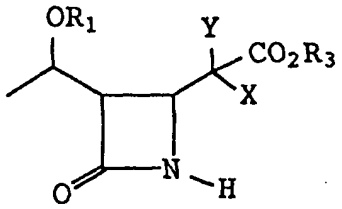
Amendments to the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

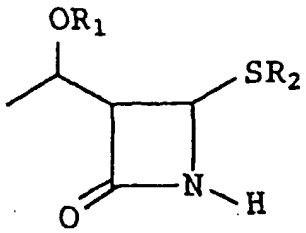
Listing of claims:

Claims 1-19 (cancelled).

20 (currently amended): A process for synthesizing a 4-substituted azetidinone derivative representative by the formula [3]:



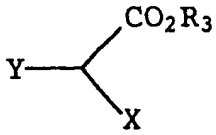
which comprises reacting an azetidinone derivative represented by the formula [1]:



wherein OR_1 is a protected hydroxyl group; R_2 is a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group or a substituted or unsubstituted aromatic group, in the presence of:

(a) a copper compound selected from the group consisting of copper oxides, copper halides, salts of copper with aliphatic and aromatic carboxylic acids, salts of copper with mineral acids and complexes of cuprous halides, or

(b) a mixture of zinc with at least one of said copper compounds with an ester compound represented by the formula [2]:



wherein CO_2R_3 is an esterified carboxyl group, selected from the group consisting of, substituted or undubstituted, tri-substituted silyl carboxyl ester, tri-substituted silyl lower-alkyl carboxyl ester, ~~and~~ aromatic heterocyclic carboxyl ester, lower alkyl carboxyl ester, lower alkenyl carboxyl ester, lower alkynyl carboxyl ester, aryl lower-alkyl carboxyl ester, aryl carboxyl ester, and phthalidyl carboxyl ester ~~which may be substituted~~;

wherein X and Y are the same or different and represent individually a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkylthio group, a substituted or unsubstituted alkenylthio group, a substituted or unsubstituted aralkylthio group, a substituted or unsubstituted arylthio group, a substituted or unsubstituted alkyloxy group,

a substituted or unsubstituted alkenyloxy group, a substituted or unsubstituted aralkyloxy group, a substituted or unsubstituted aryloxy group, a substituted or unsubstituted silyloxy group, a substituted or unsubstituted heterocyclic group, a substituted or unsubstituted heterocyclic-thio group, a substituted or unsubstituted heterocyclic-oxy group, a substituted or unsubstituted acyl group, an alkyloxycarbonyl group, an alkenyloxycarbonyl group, an aralkyloxycarbonyl group, an aryloxycarbonyl group, an alkylthiocarbonyl group, an alkenylthiocarbonyl group, an aralkylthiocarbonyl group, an arylthiocarbonyl group, a substituted or unsubstituted aminocarbonyl group, a substituted or unsubstituted amino group, a hydrogen atom or a halogen atom, or, when taken together with the carbon to which they are attached, form a substituted or unsubstituted cycloalkan-2-on-1-yl group;

wherein any substitutents on R_2 are selected from the group consisting of halogen, lower alkyl, monocyclic or polycyclic alkyl, lower alkoxy, carboxyl, amino, nitro, cyano, hydroxy, aryl of 6 to 10 carbon atoms and aralkyl groups of 7 to 24 carbon atoms;

wherein any substituents on X and Y are selected from the group consisting of halogen, formyl, nitro, cyano, hydroxyl, amino, lower alkyl, monocyclic and polycyclic alkyl, lower alkenyl, aryl of 6 to 10 carbon atoms, aralkyl of 7 to 24 carbon atoms, alkylthio, alkenythio, aralkythio, arylthio, alkyloxy, alkenyloxy, aralkyloxy, aryloxy, alkylsulfinyl, alkylsulfonyl, aralkylsulfinyl, aralkylsulfonyl, arylsulfinyl, arylsulfonyl, carbamoyl, carbamoyloxy, imino-lower-alkyl, imino-lower-alkylamino, acyloxy, silyloxy, heterocyclic, heterocyclic-thio, heterocyclic-oxy, acyl and

except when X and Y are acyl, carboxyl, alkyloxycarbonyl, alkenyloxycarbonyl, aralkyloxycarbonyl, aryloxycarbonyl, alkylthiocarbonyl, alkenylthiocarbonyl, aralkylthiocarbonyl, arylthiocarbonyl and a substituted or unsubstituted aminocarbonyl group.

21 (previously presented): The process of claim 20 for synthesizing a 4-substituted azetidinone derivative represented by the formula [3], wherein said process further comprises the steps of treating an ester compound represented by the formula [2] with an alkali metal hydride to convert to the corresponding metal enolate, followed by reaction with an azetidinone derivative represented by the formula [1] in the presence of a copper compound.

22 (currently amended): The process of claim 20 wherein the ester compound represented by the formula [2] is a halogenated acetic acid ester, a malonic acid ~~ester~~ diester, a 2-alkylmalonic acid ~~ester~~ diester, a 2-halogenated malonic acid ~~ester~~ diester, a 2-alkyl-acylacetic acid ester or a cycloalkan-2-on-1-carboxylic acid ester.

23 (currently amended): The process of claim 20 wherein the ester compound represented by the formula [2] is a bromoacetic acid ester, a malonic acid ~~ester~~ diester, a 2-methylmalonic acid ~~ester~~ diester, a 2-fluoromalonic acid ~~ester~~ diester, a 2-methylacetoacetic acid ester or a cyclohexan-2-on-1-carboxylic acid ester.

24 (previously presented): The process of claim 20 wherein the copper compound is a cuprous bromide dimethylsulfide complex.